

The Hunt for Normal Worry: Empirically Distinguishing Normal and Pathological Worry

William E. Kelly¹

¹ Department of Social Sciences, Robert Morris University, Moon Township, Pennsylvania, United States

Correspondence: William E. Kelly (wkelly@uiwtx.edu)

ABSTRACT - Worry is often conceptualized as pathological. However, it may also serve adaptive and constructive functions. The present research investigated whether “normal” worry represents a distinct construct separable from pathological worry. Across four studies of university student samples, a new measure—the Normal Worry Questionnaire (NORWO)—was developed and evaluated. Study 1 supported the reliability and unidimensional factor structure of the NORWO. Study 2 found that NORWO items loaded on a factor statistically separate from the Penn State Worry Questionnaire (PSWQ), suggesting separability of normal and pathological worry. Study 3 demonstrated that the NORWO accounted for unique variance outside of the PSWQ in adaptive coping and optimism, though not in rumination, further supporting discriminant validity. Study 4 established adequate test–retest reliability over a four-week interval. Taken together, results provide preliminary evidence that normal worry can be measured as a stable, psychometrically sound construct that is meaningfully distinct from pathological worry. Further research is needed to clarify its theoretical and practical implications.

Keywords:

Normal worry;
Pathological worry;
Worry assessment;
Psychometrics; Coping style

Introduction

Nearly everyone worries at least sometimes. However, there are individual variations. For example, in one sample of 128 college students, Tallis et al. (1994) reported that 38% of respondents worried every day, while 72% endorsed worrying at least once a month. The average worry episode lasted 5 to 10 minutes. Such findings indicate that worry is a common phenomenon, raising doubts about whether it should always be conceptualized as pathological (Nevid et al., 1997). Nevertheless, much of the psychological literature has portrayed worry as pathological. Yet, based on its frequency and problem-solving potential, some forms of worry may be considered “normal.” Davey (1994) defined normal worry as relatively common, constructive, and controllable, often functioning as an attempt to solve current or anticipated problems – even if individuals still perceive it as “worry” rather than deliberate problem-solving. He further suggested

that normal and pathological worry may not be "...the same theoretical beast" (p. 36). Indeed, this description of normal worry is essentially the opposite of descriptions of pathological worry as uncontrollable, unrealistic, and excessive (Borkovec et al., 1991).

Uncertainty remains whether normal and pathological worry are distinct constructs or instead represent different points along a single continuum. Some argue that some level of worry can be adaptive, suggesting the existence of a normal worry construct (Davey, 1994; Kelly, 2002). For example, the Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990), described as a measure of pathological worry, and the Worry Domains Questionnaire (WDQ; Tallis et al., 1991), designed to assess typical worry content, have been found to account for separate variances in constructs such as coping styles (Davey, 1993) and boredom proneness (Kelly, 2002). These findings lend some support to the possibility that normal and pathological worry may be meaningfully separable.

Other evidence, however, points to a single underlying construct. Ruscio et al. (2001), using taxometric methods, concluded that the PSWQ and items assessing excessiveness, controllability, and frequency of worry from the Generalized Anxiety Disorder Questionnaire (Newman et al., 1997) measured a single worry continuum. A limitation of this study, however, was its reliance on measures that largely assessed pathological experiences of worry, raising questions about whether their findings preclude the existence of a separate normal worry construct.

Measurement issues further complicate the issue. Although the WDQ was introduced as a measure of nonpathological worry, it has consistently shown strong positive correlations with the PSWQ (Davey, 1993; Dugas, et al., 1995; Kelly, 2002) and with trait anxiety (Davey, 1993, 1994; Stöber & Joormann, 2001). This suggests that the WDQ may primarily reflect worry frequency across domains of worry content, which may capture elements of pathological worry, rather than a distinct "normal" worry construct. Still, some evidence suggests a separation: pathological worry but not worry assessed by the WDQ, has been linked to nightmare frequency (Kelly, 2018). Moreover, when the overlap between the two was controlled, the PSWQ was more strongly related to anxiety, while the WDQ was more closely associated with stress (Kelly, 2008). However, taking these findings together, all that can be concluded is that general pathological worry reports of specific worry frequency account for separate variance. As such, if normal worry does exist, a more apt measure may be needed to assess it.

Beyond this structural debate, worry has been linked to a wide array of psychological processes and outcomes. Worry is often conceptualized as a future-oriented chain of negative thoughts (MacLeod et al., 1991) that is separable from, yet related to, anxiety and stress (Davey, 1993; Davey et al., 1991; Kelly, 2004a, 2004b). It has been associated with heightened threat perception (Robichaud et al., 2003), fear of anxiety, intolerance of uncertainty (Buhr et al., 2009), procrastination (Spada et al., 2006), perfectionism (Chang, 2000), depressive symptoms (Buck et al., 2008), less life satisfaction (Paolini et al., 2006), obsessive tendencies (Lee et al., 2005), reports of dysfunctional family of origin environments (Kelly & Paolini, 2014), narcissism (Kelly, 2014), introversion and feeling personality traits from Jung's typology (Ragozzino & Kelly, 2011), and neuroticism (Bredemeier et al., 2011). Models of worry suggest it develops from the interaction of negative beliefs about problem-solving ability (Davey et al., 1996; Kelly & Daughtry, 2011), the belief that worry is necessary to cope (Kelly & Kelly, 2007; Kelly & Miller, 1999), and attentional processes that magnify threat (Hirsch & Mathews, 2012).

Given its breadth of associations, it is not surprising that worry is often labeled pathological in the psychological literature (Borkovec et al., 1998). Yet the commonplace nature of worry, coupled with large individual differences in its frequency and intensity, makes the assumption that all worry is pathological less certain (Strack, 2006). A central limitation in this debate is the lack of a clear, psychometrically valid instrument that can distinguish normal from pathological worry. Existing measures either confound the two (e.g., the WDQ's positive relationships with pathological worry and trait anxiety) or focus almost

exclusively on pathological features (e.g., the PSWQ). As a result, it remains unclear whether normal worry is an empirically distinct construct or merely one end of a pathological continuum.

The present study directly aims to address this gap. Specifically, it examines whether a normal worry construct can be identified through self-report methodology and empirically distinguished from pathological worry. By testing whether normal worry predicts outcomes in ways that differ systematically from pathological worry, this work aims to clarify whether previously noted distinctions between “normal” and “pathological” worry is supported by evidence rather than inference.

Study 1

Study 1 was intended to develop and explore the basic psychometric properties of a new scale designed to measure normal worry.

Method

Participants and Procedure

After providing informed consent, 155 students (105 women, 50 men) enrolled in undergraduate and graduate university courses were administered the measures described below in a paper and pencil format in small group settings. The average age of the sample was 25.8 years ($SD = 9.9$). Nominal course credit was provided in exchange for participation.

Measures

Worry Items. An initial pool of 23 items was developed to measure the hypothesized construct of normal worry. Items were developed to reflect the commonality and normalcy of worry (e.g., “I worry no more than most other people” and “I consider my worrying to be normal”). An attempt was also made for items to reflect the use of worry as a constructive (“worrying helps me to solve my problems, not make them worse”), controllable (“I can easily control my worrying”), and sometimes necessary attempt to solve problems (“worrying is sometimes helpful to me”). Participants responded using a 5-point scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”).

Statistical Analysis

The method suggested by Jackson (1970) was used to identify the most interrelated items to use as a scale for further investigation. Using this approach, an iterative process of omitting item with the lowest item-total correlation is systematically repeated until a final scale with maximized internal consistency is achieved. Items selected for the final scale were then subjected to principal components factor analysis.

Results and Discussion

The systematic deletion of items with the lowest item-total scale correlations resulted in a final scale of nine items with a coefficient alpha reliability of .91. These nine items were subsequently termed the Normal Worry Questionnaire (NORWO). Principal components analysis of the nine items resulted in a single factor with an eigenvalue greater than 1 (eigenvalue = 5.2) accounting for 58% of the systematic variance in responses. Items, their means, standard deviations, and factor loadings are presented in Table 1. Evaluation of the total score distribution found that skewness = -0.40 and kurtosis = -0.39. This was considered within normal limits for normality. NORWO total scores did not significantly correlate with age, $r = .07$, $p = .398$, and there were no significant differences between males and females, $t(149) = 0.13$, $p = .900$, $d = .022$.

The results of Study 1 suggest that the NORWO is internally consistent and measures a single underlying construct. Further, scores did not appear to be biased by age and gender. Based on these results, the NORWO was deemed to have adequate psychometric properties for further investigation.

Table 1: NORWO items and their factor loadings, means, and standard deviations

Item	<i>M</i>	<i>SD</i>	FL
1. My worries come and go fairly quickly.	3.00	1.10	.73
2. I consider my worrying to be normal.	3.60	1.00	.75
3. I can easily control my worrying.	3.10	1.10	.78
4. I worry, but it doesn't affect my life very much.	3.10	1.20	.76
5. I worry, but it isn't very severe.	3.60	1.00	.81
6. My worries don't seem overwhelming.	3.40	1.10	.83
7. I worry, but it's not much of a problem for me.	3.50	1.10	.80
8. I almost never worry that I worry too much	3.50	1.10	.67
9. I don't consider myself to be a "worrier."	3.30	1.30	.72
Total scale	30.00	7.60	

Note: NORWO = Normal Worry Questionnaire; FL = Factor loading

Study 2

Study 1 found the existence of a possible normal worry factor. However, it was not clear as yet if the NORWO measured a construct distinct from pathological worry. The aim of Study 2 was to compare the factor structure of NORWO items and those from a measure of pathological worry.

Method

Participants and Procedure

After providing informed consent, 412 students (314 women, 98 men) enrolled in graduate and undergraduate courses were administered the measures described below. The average age of the sample was 25.6 years ($SD = 8.7$). Again, participants completed paper and pencil questionnaire packets in small groups. Nominal course credit was provided in exchange for participation.

Measures

Normal Worry Questionnaire (NORWO). The nine-item NORWO was administered as described in Study 1.

Penn State Worry Questionnaire (PSWQ). The 16-item PSWQ (Meyer, et al., 1990) measures pathological worry, e.g., "Once I start worrying, I can't stop." Participants respond using a 1 ("strongly disagree") to 5 ("strongly agree") scale. Items are summed to produce a total score. Higher scores indicate more pathological worry. Psychometric properties have been reported as good (Meyer et al., 1990).

Statistical Analysis

A Pearson correlation was calculated between NORWO and PSWQ total scores. NORWO and PSWQ items were subjected to principal components factor analysis. To facilitate interpretability a varimax rotation was used. In attempts to provide some "practical significance" of findings, a stringent factor loading cut-off criteria of .50 was chosen, as was a minimum eigenvalue of 1.0 for factor retention (Hair et al., 1995).

Results and Discussion

The coefficient alphas of the NORWO and PSWQ in this sample were .92 and .94, respectively. Total NORWO and PSWQ scores were strongly negatively correlated $-.77, p < .001$. The factor analysis resulted in extraction of three factors accounting for a total of 62.0% of the variance in responses. Factor 1 (eigenvalue = 6.75) accounted for 27.0% of the variance and included all the positively worded items of the PSWQ. Factor 2 (eigenvalue = 5.66) accounted for an additional 23.0% of the variance and included all

NORWO items plus the reverse of one positively worded PSWQ item. Factor 3 (eigenvalue = 3.21) accounted for an additional 13.0% of the variance and included all the negatively worded PSWQ items. Item loadings and item content are presented in Table 2.

Table 2: Factor analysis with varimax rotation of NORWO and PSWQ items

Item content	Factor		
	1	2	3
PSWQ			
1. Time to complete everything (r)			.67
2. Overwhelmed by worries	.64	-.52	
3. I don't worry (r)			.68
4. Worry about many situations	.73		
5. Can't help worrying	.72		
6. Worry under pressure	.66		
7. Always worrying about something	.79		
8. Easy to dismiss worries (r)			.63
9. Worry about one task after another	.74		
10. Never worry (r)			.62
11. Don't worry about uncontrollable (r)			.66
12. Always been a worrier	.74		
13. Aware of worrying	.66		
14. Can't stop worrying	.73		
15. Always worrying	.78		
16. Worry about unfinished tasks	.69		
NORWO			
1. Worries come and go quickly		.54	
2. Consider my worry normal		.66	
3. Easily control worry		.63	
4. Worry doesn't affect my life		.75	
5. Worry isn't severe		.81	
6. Worry isn't overwhelming		.74	
7. Worry isn't a problem		.80	
8. Never worry about worry		.62	
9. Don't consider self a worrier		.59	

Note: PSWQ = Penn State Worry Questionnaire; NORWO = Normal Worry Questionnaire; (r) = reverse coded item.

The results of this study further explicate the statistical separation of normal and pathological worry constructs as measured by the instruments used in this study. According to these findings, the two scales in this study could represent three elements of worry: pathological worry, normal worry, and non-worry, or worry denial. The finding of two PSWQ factors, accounting separately for the positively and negatively worded items is consistent with previous research (Fresco et al., 2002).

Study 3

Study 1 and 2 found that a hypothetical normal worry construct would be identified as structurally separate than pathological worry. However, the strong negative correlation between total NORWO and PSWQ scores still may indicate two poles of a worry continuum. The aim of Study 3 was to investigate

whether the NORWO and PSWQ each account for unique variance in constructs previously linked to worry: rumination (Muris et al., 2004), coping style (Davey, 1993), and optimism (Chang, 2000).

Method

Participants and Procedure

After providing informed consent, 102 university students (61 women, 41 men) enrolled in undergraduate and graduate psychology courses were administered the self-report measures described below. The average age of the sample was 28.6 years ($SD = 12.1$).

Measures

Worry. The NORWO and PSWQ were administered as described previously.

Coping. Coping style was measured using the 18-item Problem Focused Coping Scale (PFCS; Heppner et al., 1995). The PFCS measures three factors of coping styles: (1) reflective style (“I think my problems through in a systematic way”), (2) suppressive style (“I avoid even thinking about my problems”), and (3) reactive style (“My feelings get in the way of solving current problems”). Participants respond using a 1 (“strongly disagree”) to 5 (“strongly agree”) scale. Total scores indicate more of each coping style. Adequate psychometric properties have been reported previously (Heppner et al., 1995; Kelly & Kelly, 2008).

Rumination. The nine-item Scott-McIntosh Rumination Inventory (SMRI; Scott & McIntosh, 1999) was included as a measure of general negative thought, i.e., rumination. The SMRI includes three factors: 1) motivation (“When I think about unaccomplished goals from my past, I become inspired to reach them”), 2) distraction (“I often get distracted from what I’m doing by thoughts about something else”), and 3) emotionality (“I become angry when I think about goals that I have not yet reached”). Participants responded using a 1 (“strongly disagree”) to 7 (“strongly agree”) scale. Total score indicate more of each rumination factor. Reliability and validity have been reported as adequate (Scott & McIntosh, 1999).

Optimism. The eight-item Life Orientation Test (LOT; Scheier & Carver, 1985), is a measure of optimistic thinking, i.e., optimism (“In uncertain times, I usually expect the best”). Participants responded using a 1 (“strongly disagree”) to 5 (“strongly agree”) scale. Higher scores indicate more optimism. Good psychometric properties have been reported (Scheier & Carver, 1985).

Statistical Analysis

Pearson correlations were calculated between the NORWO and other measures. Also, using the method of Davey et al. (1992), partial correlations were calculated between NORWO scores and other measures while holding PSWQ scores constant. According to Davey et al. this method allows examination of whether a variable accounts for its own variance; thus, allowing the possibility it is functionally a separate construct.

Results and Discussion

Although some were lower than desirable (i.e., $< .70$), most scales had adequate internal consistency coefficients for research purposes (Nunnally, 1978). Pearson correlations between the NORWO and the other measures used in this study are presented in Table 3. As seen in the table, the NORWO significantly correlated with all variables. Individuals who scored higher on the NORWO scored significantly lower on the PSWQ, had a higher reflective coping style, and a lower suppressive and emotionally reactive coping style. Higher NORWO scorers also reported that their ruminations motivated them to act and less likely to distract them or emotionally affect them. Finally, high NORWO scorers tended to have higher optimism.

Table 3: Scale properties and correlations with the NORWO and partial correlations holding the PSWQ constant

	NORWO <i>r</i>	NORWO <i>r</i> while holding the PSWQ constant	α
NORWO			.91
PSWQ	-.72**		.94
Coping			
Reflective	.33**	.29**	.82
Suppressive	-.37**	-.31**	.79
Reactive	-.47**	-.26**	.74
Rumination			
Motivation	.18*	.12	.81
Distraction	-.28**	-.16	.56
Emotionality	-.31**	-.02	.67
Optimism	.43	.26**	.87

Note: $N = 102$. NORWO = Normal Worry Questionnaire; PSWQ = Penn State Worry Questionnaire. * $p < .050$ ** $p < .010$

Partial correlations between the NORWO and other measures while holding the PSWQ constant are also presented in Table 3. After accounting for the PSWQ the NORWO remained significantly related to all coping styles and optimism. However, the NORWO was no longer related to ruminative thinking. Thus, normal worry as assessed by the NORWO generally accounts for its own variance separate from pathological worry in measures reflecting an ostensibly healthier thinking style, as would be expected of a normal worry construct as defined in this study.

Study 4

The previous studies suggest that a normal worry construct is measurable and appears separate from pathological worry. The purpose of Study 4 was to examine the test-retest reliability of the NORWO.

Method

Participants and Procedures

Ninety-five students (89 women, 6 men) enrolled in undergraduate psychology courses participated. The average age of the sample was 25.2 years ($SD = 7.6$). After providing informed consent, participants completed the NORWO (described previously) as part of a larger paper and pencil questionnaire, on two occasions with a four week interval.

Statistical Analysis

Test-retest reliability was determined using a Pearson correlation between total NORWO scores at Time 1 and Time 2.

Results and Discussion

The test-retest reliability of the NORWO after four weeks was .81. This was interpreted as good retest reliability. This result suggests that NORWO scores appear temporally stable. The same might be true of

normal worry. However, it should be noted that a one-month interval might be considered relatively brief timespan and does not necessarily indicate long-term stability.

General Discussion

The results of the current studies provide some evidence that a normal worry construct, as defined herein, is measurable using self-report methodology. The NORWO had adequate psychometric properties providing some evidence of a unitary construct as well as convergent (strong negative correlations with the PSWQ) and discriminant validity (it accounted for unique variance outside of pathological worry). Scores based on the measure were stable across one month. These findings provide preliminary evidence that, as Davey (1994) mused, normal and pathological worry may indeed be separate. Adding to this, normal worry may reflect a stable, trait-like individual differences variable. Clearly, however, additional study investigating to confirm this is warranted.

On the other hand, because the NORWO was highly negatively related to the PSWQ in Studies 2 and 3, it might still be that normal worry is the lower end of a normal – pathological worry continuum as suggested by Ruscio et al. (2001) rather than conceptually separate. However, the separate factors identified in Study 2 and relatively reliable levels of separate variance accounted for in coping styles and optimism make this seem less likely. It is also noteworthy though, that after accounting for pathological worry the NORWO was no longer significantly related to rumination. Given rumination describes a negative, relatively difficult to control thinking style which may share underlying processes with pathological worry (Watkins et al., 2005), this makes some sense. That is, without the influences of pathological worry, even negatively related, normal worry was related to a more constructive, though manageable, thinking processes (Davey, 1994).

It is not yet clear what implications the current results have for worry research. It is not yet known, for example, what belief structures about worry (e.g., Kelly & Kelly, 2007) or perceptions of the self might be associated with normal worry as compared to pathological worry. Further, previous findings indicated that pathological worry was related to accelerated brain aging (Karim et al., 2021). It might be that individuals more prone to normal worry paired with an optimistic disposition fare better.

It could also be of interest to explore lifestyle and clinical implications regarding normal worry. For instance, if there is indeed an adaptive form of worry, attempts to utilize harness it might increase conscientiousness among individuals on the lower end of that domain. It might also provide some comfort to individuals facing difficult choices. Further, interventions for pathological worry such as thought stopping and setting a worry period (Kelly & Miller, 1999) potentially could shift pathological worry to a more constructive form. Additional study is needed to examine if it would be useful to replace pathological with normal worry.

Though the current findings were generally encouraging, many questions remain. For instance, it is not yet known whether, or how, the NORWO relates to commonly experienced worry content as captured by the WDQ (Tallis et al., 1991). It would be interesting to examine relationships between the NORWO and WDQ after accounting for pathological worry. Also, it is possible that reports of normal worry are driven by a socially desirable response and self-perception bias (Crowne & Marlow, 1964), or perhaps similarly, a repressive process (Yu, 2011). Additional research is needed to determine this. Finally, it might be examined how normal worry relates to personality dimensions such as the Big Five (McCrae & Costa, 2008).

In terms of limitations, it should be noted that the current studies only included mostly women university students in the United States. Additional study using community samples from different backgrounds would allow more generalizable findings. Also, the methodology of the current studies provides only provided responses at one point in time and summative responses to pre-determined items.

Using experience sampling and qualitative interviews might provide more in depth understanding of the normal – pathological worry experience.

In conclusion, the current studies suggest that a normal worry construct appears to exist statistically independent of pathological worry. Normal worry accounted for its own variance in positive problem-solving approaches and dispositions. It also appeared to be somewhat stable across time. Additional research is required to replicate and further these findings.

Acknowledgements: All studies were approved by the Institutional Review Board at the institution where data was collected and followed standards of the Declaration of Helsinki.

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